



HAWAII COOPERATIVE EXTENSION SERVICE

College of Tropical Agriculture and Human Resources

University of Hawaii

GENERAL HOME GARDEN SERIES No. 13

AVERAGE COMPOSITION OF SOME FERTILIZER MATERIALS CONTAINING THE PRIMARY (MAJOR) PLANT NUTRIENTS¹

by Wade W. McCall*

Material	Percent plant food				Relative availability of plant food	Effect of 100 pounds of material on soil reaction ³		Salt index ⁴
	Nitrogen (N)	Available phosphoric acid (P ₂ O ₅)	Water- soluble potash (K ₂ O)	Other elements ²		Acid	Alkaline	
Anhydrous Ammonia	82				Quick	148		0.6
Aqua Ammonia	16-25				Quick	36-54		0.6
Ammonium Nitrate	35				Rapid	60		3.0
Ammonium Nitrate Lime	20.5			8.2-16.3 Ca, 0-7.8 Mg	Rapid to Quick	n	n	3.0
Ammonium Sulfate	21			24 S	Quick	110		3.3
Ammonium Nitrate Sulfate	26-30	0-1		11-15 S	Rapid	65-85		3.1
Calcium Cyanamid	21			38.5 Ca	Quick		63	1.5
Calcium Nitrate	15			21 Ca	Rapid		20	4.4
Nitrate of Soda	16			27 Na ⁵	Rapid		29	6.1
Nitrate of Soda Potash	15		14	18 Na ⁵	Rapid		29	3.2
Nitrate of Potash	13-14		44		Rapid		26	1.2
Nitrogen Solutions	21-49				Rapid to Quick	37-88		1.9
Urea	46				Quick to Rapid	84		1.6
Urea Formaldehyde	38				Slow	68		
Ammoniated Superphosphate	3.6	18-20		17.2 Ca, 12 S	Moderate	7		0.5
Ammonium Phosphate Nitrate	27	15			Quick to Rapid	62		
Ammonium Phosphate (Mono)	11-12	48-61			Quick to Rapid	62		
Ammonium Phosphate (Di)	16-21	46-54			Quick	63-73		0.5
Basic Slag (Open Hearth)		8-12		28 Ca, 3 Mg, 2.3 Mn	Quick		70	
Colloidal Phosphate		20-24		38.7 Ca	Slow		10	
Rock Phosphate		33-35		33 Ca	Slow		10	
Superphosphate--Normal		18-21		20 Ca, 12 S	Quick to Moderate	n	n	0.4
Superphosphate-- Concentrated		42-52		14 Ca, 1.4 S	Quick to Moderate	n	n	0.2
Nitric Phosphate	14-22	10-22		8-10 Ca	Quick	15-25		

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**AVERAGE COMPOSITION OF SOME FERTILIZER MATERIALS
CONTAINING THE PRIMARY (MAJOR) PLANT NUTRIENTS¹—Continued**

Material	Nitrogen (N)	Percent plant food		Other elements ²	Relative availability of plant food	Effect of 100 pounds of material on soil reaction ³		Salt index ⁴
		Available phosphoric acid (P ₂ O ₅)	Water- soluble potash (K ₂ O)			Acid	Alkaline	
Phosphoric Acid		52-83			Rapid	50-70		1.8
Potassium Chloride			60-62	47 Cl	Quick	n	n	1.9
Potassium Sulfate			50-53	18 S	Quick	n	n	0.9
Potassium-Magnesium Sulfate			22-26	11-12 Mg, 22 S	Moderate	n	n	2.0

¹The percentages given in this table are average figures or indicate a range in composition. When obtaining fertilizer materials, always purchase according to the guaranteed analysis of the material. The materials included in this table may not all be available for purchase at any given time.

²Chemical symbols for elements are: Ca, calcium; Mg, magnesium; S, sulfur; Na, sodium; Mn, manganese; Cl, chlorine.

³Acid--increases the acidity of the soil as measured by the amount of calcium carbonate (CaCO₃) required to neutralize its effect upon the soil. Alkaline--reduces the acidity of the soil to the extent of an equivalent amount of CaCO₃. "n" indicates negligible effect upon the soil reaction.

⁴Salt index is based upon per unit (20 pounds) of plant nutrient, or 1 percent of a ton. Where no value is given, the effect is negligible or the effect is not known.

⁵Sodium is not considered an element essential for plant growth and may be toxic to plants if present in too great quantity.

NOTE: The use of trade names is for the convenience of readers only and does not constitute an endorsement of these products by the University of Hawaii, the College of Tropical Agriculture and Human Resources, the Hawaii Cooperative Extension Service, and their employees.

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